

WHAT IS CLAIMED IS:

1. A solid-state image pickup apparatus comprising:  
an image pickup section; and  
a signal feeding section;  
said image pickup section comprising:
  - 5        photosensitive cells arranged bidimensionally, each being shifted from adjoining photosensitive cells in a horizontal and a vertical direction, for photoelectrically transducing incident light;  
         a color filter having R (red), G (green) and B (blue)  
10       color filter segments, each being positioned in front of a particular photosensitive cell in a direction of light incidence, for separating colors of incident light representative of a scene, said R, G and B color filter segments each being arranged in a vertical stripe pattern;  
15       transfer electrodes, each being assigned to a particular photosensitive cell, for reading out a signal charge generated by said photosensitive cell, said transfer electrodes being assigned to vertical transfer paths and a horizontal transfer path substantially perpendicular to the vertical transfer paths;  
20       and  
         control circuitry for sequentially performing preliminary pickup and actual pickup, which reads all of the signal charges out of said photosensitive cells, and executing digital signal processing with resulting signals;
  - 25       said signal feeding section feeding transfer timing signals for transferring signal charges generated by only part of said photosensitive cells arranged on odd-numbered columns or even-numbered columns to the vertical transfer paths via said transfer electrodes associated with said part of said  
30       photosensitive cells, the vertical drive signals for transferring said signal charges along said vertical transfer paths toward the horizontal transfer path, and horizontal drive signals adjusted in timing for transferring the signal charges

along said horizontal transfer path while maintaining a color  
35 of an individual signal charge.

2. An apparatus in accordance with claim 1, wherein in the event of the preliminary pickup said signal feeding section output said horizontal drive signals such that a well is formed in each packet of said horizontal transfer path adjoining a packet storing the individual signal charge at the same time as a well formed in said packet storing said individual signal charge.

3. An apparatus in accordance with claim 1, wherein said signal feeding section outputs said horizontal drive signals such that a range of said horizontal transfer path driven in a same phase and derived from an electrode structure of said horizontal transfer path is doubled.

4. An apparatus in accordance with claim 3, wherein when said horizontal transfer path has a four-electrode structure, said signal feeding section outputs said horizontal drive signals such that two phases are combined into a single phase.

5. A method of reading signal charges generated by photosensitive cells, which are arranged bidimensionally and each is shifted from adjoining photosensitive cells in a horizontal and a vertical direction for photoelectrically transducing light of particular separated color incident thereto, in a particular manner for preliminary pickup and actual pickup, which reads all of said signal charges out of said photosensitive cells for recording said signal charges, said method comprising the steps of:

10 (a) positioning in front of said photosensitive cells  
in a direction of light incidence a color filter, in which  
three primary colors R, G and B each are arranged in a vertical

stripe pattern, for separating incident light, and forming transfer electrodes each being assigned to a particular photosensitive cell for reading out a signal charge generated by said photosensitive cell, said transfer electrodes respectively contacting said photosensitive cells;

(b) generating drive signals for reading out the signal charges generated by said photosensitive cells and representative of an image picked up;

(c) rendering, during the preliminary pickup, only the transfer electrodes associated with part of said photosensitive cells arranged on odd-numbered columns or even-numbered columns conductive by using said drive signals to thereby reduce pixels in the horizontal direction;

(d) transferring the signal charges read out in said step (c) in the vertical direction by using said drive signals; and

(e) transferring the signal charges transferred in the vertical direction in the horizontal direction perpendicular to said vertical direction by adjusting a timing of said drive signals.

6. A method in accordance with claim 5, wherein said step (b) comprises the step (f) of generating, in the event of the preliminary pickup, horizontal drive signals such that a well is formed in each packet horizontally adjoining a packet storing an individual signal charge at the same time as a well formed in said packet storing said individual signal charge.

7. A method in accordance with claim 5, wherein said step (e) comprises the step (g) of generating said drive signals such that a range of a same phase is doubled in the horizontal direction.

8. A method in accordance with claim 7, wherein, when

